DOCUMENT RESUME

ED 045 171 LI 002 391

TITLE	Baltimore Metropolitan Area Library Study: Recommended Long-Range Work Program, Final Report.
INSTITUTION	CONSAD Research Corp., Pittsburgh, Pa.
SPONS AGENCY	Maryland State Dept. of Education, Baltimore. Div. of Library Development and Services.; Regional Planning Council, Baltimore, Md.
PUB DATE	15 Jan 70
NOTE	51p.: Prepared for Librarian's Technical Steering Committee and Regional Planning Council
EDRS PRICE	EDRS Price MF-$0.25 HC-$2.55
DESCRIPTORS	Costs, Information Needs, Information Systems, *Libraries, *Library Programs, *Library Services, Planning, *Public Libraries, Resource Allocations, *Systems Analysis

ABSTRACT

This report outlines a Long Range Work Program consisting of a series of research efforts which, when implemented, will supply the basic components for the planning portion of a cooperative region-wide coordinating and decision-making process. These components are: a planning information system, goals and needs analysis procedure, program analysis and cost analysis procedures, an institutional and fiscal resources study, a region-wide project selection and resource allocation procedure, and a number of special, in-depth subject studies. Chapter I introduces the concepts underlying the design of the planning process; Chapter II describes each component of the Long-Range Work Program; Chapter III describes in detail the suggested study plan by which the approach can be implemented, and Chapter IV discusses the time frame for conducting the work program. (Author/AB)

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FINAL REPORT

BALTIMORE METROPOLITAN AREA LIBRARY STUDY

RECOMMENDED LONG-RANGE WORK PROGRAM

January 15, 1970

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Librarian's Technical Steering Committee
and
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LI 002391

The preparation of this report was financed in part through an agreement between the State Division of Library Development and Services, Maryland Department of Education, and the Regional Planning Council. Funding was under a grant to the State Division of Library Development and Services from the Department of Health, Education and Welfare as authorized by the Library Services and Construction Act of 1966.

ABSTRACT

Librarians in the Baltimore Metropolitan Area have recognized the need to develop, on a cooperative basis, a region-wide planning, coordinating and decision-making process. This report outlines a Long Range Work Program, consisting of a series of research efforts, which, when implemented, will supply the basic components of the desired planning process. These components are:

A. A planning information system
B. Goals and needs analysis procedure
C. Program analysis and cost analysis procedures
D. An institutional and fiscal resources study
E. A region-wide project selection and resource allocation procedure, and
F. A number of special, in-depth subject studies.Chapter I

Chapter I introduces the concepts underlying the design of the planning process. The need to make decisions with long-range implications, such as the location of a new library, is always immediate and on-going. Such decisions must be based upon the "partial" information available. The thrust of the suggested work program, therefore, is to organize, as well as expand, the amount of useful information to guide the decision process, and to establish a flexible framework for region-wide library planning.

Chapter II describes each component (A-F) of the Long-Range Work Program -- what the objectives are, how each contributes to the development of a planning process, what topics each covers, and guidelines for implementation. Work Element B, "Goals and Needs Anaylsis" and Element D, "Institutional and Fiscal Resources Study" are designed to determine the objectives which the library system seeks to achieve and the constraint under which it functions, respectively. Work Element C, "Program Analysis and Cost Analysis Procedures" and Element F, "Special

Studies" are meant to supply quantitative estimates of the costs and benefits of alternate means of providing library services. Work Element E, "Region-Wide Project Selection and Resource Allocation Procedures" should provide a frame-work for evaluating different arrays of costs and benefits and lead from planning into programming and budgeting. Meanwhile, Work Element A, "Planning Information System" is to construct a mechanism for supplying the information continually required by the other components of the planning process.

Whereas Chapter II portrays the basic philosophy and approach toward developing a useful and viable planning process, Chapter III describes in detail the suggested study plan by which the approach can be implemented. The work program is broken down into major tasks and sub-tasks, each of which may be considered to be a semi-autonomous study in its own right.

Lastly, Chapter IV discusses the time-frame for conducting the work program and recommends Task B, "Goals and Needs Analysis" have priority in implementation.

FOREWARD

ATTAINMENT OF LIBRARY PURPOSES

AN INTRODUCTORY STATEMENT BY THE TECHNICAL STEERING COMMITTEE, BALTIMORE METROPOLITAN AREA LIBRARY STUDY

A new direction and a revised set of objectives are mandated for libraries. The new look in library service must come about from a combination of talents contributed by the experts in automation and information retrieval, working side by side with progressive librarians.

It is an exciting prospect to anticipate newly constituted and complete media and information centers comprising units within a national network dynamically serving every segment of our population. As a result, political leaders, educators, planners, and management experts will have been convinced of the need for massive support of libraries.

Well-informed and well-educated library personnel will staff our newly designed library buildings containing all types of media, as well as books, and communications equipment. Thus the library user benefits by virtue of the fact that he will have access to resources of all libraries in a national information system. Just as individual libraries no longer stand alone, they will no longer serve on a stand-by basis but will assume aggressive roles in reaching out to the population and reacting to total and diverse needs. In an era of rapid change, libraries, if they are to survive, must also change.

The traditional goals and purposes of a public library may be stated in these terms:

> Public library service is based on the recognition that its collections and services have an essential supportive role in the fulfillment of the needs and interests of individuals, groups and communities. It contributes to the larger goals of society

through its resources for education, understanding and self-development.

The goal of the public library is to reach and serve the total public with materials in all forms that will meet its informational, educational, and cultural needs.

It is through the librarian's special expertise as mediator between the user and the record or source of information that this goal is approached. In order to reach its goal the public library must:

1. Provide ready and convenient access to a wide variety of subjects using materials in many forms.
2. Know the community and identify the needs and interests of its people, groups and agencies.
3. Offer library services in conveniently located functional facilities.
4. Provide staff qualified by a variety of educational backgrounds and expertise.
5. Offer a full range of services and programs for its clientele.
6. Provide a broad program of public information on library services and resources.
7. Have access and linkages to other library resources in the state and the nation in order to procure needed information and materials.

While great strides have been made by librarians in the implementation of these tasks, the higher level goals of society call for new efforts. It is necessary to review the service programs of libraries, and to study patterns of organization with a view to meeting the challenges. To be specific, the following steps should be taken:

1. Re-examine the relationship of a library to other community, civic, educational or cultural institutions, especially schools, and complementary and supplementary services and resources.

(Place emphasis on an examination of the possibility of community schools providing a full range of services for a community, especially children; on larger units of service vs. many smaller units more easily reached; on service patterns as they relate to neighborhoods and people's interests and demands.)

2. Plan jointly among the various political subdivisions to provide a regional level of service which emulates the service offered by a single jurisdiction.
3. Provide special and non-traditional services for those who are physically handicapped, institutionalized, and those who are otherwise disadvantaged.
4. Seek ways to provide service to those who do not now use library systems.

   (Branch location policies may need revision or staffs may need new training. Methods that have been tried such as bookmobiles, store front outlets and combined facilities should be evaluated in the course of planning programs, as should automobile parking areas in the planning of new facilities.)
5. Orient and educate all people to the knowledge, values and satisfaction that can be derived from reading books and using the other media available in libraries.

   (Non-users and infrequent users may need special attention whereby out-reach tactics are employed to acquaint them with the potential of library services.)
6. Relate the requirements of a college student who uses a public library's resources to those in the academic library -- the need for cooperative effort between these two types of libraries.

   (Apply the same principle to all other types of libraries.)

7. Review functions, purposes, services and operational features of each type of library in order to achieve every meaningful economy and efficiency possible.
   (Libraries should study patterns, extent and variety of service approach based on cost factors as well as use factors.)
8. Advance a broader role for libraries occasioned by appropriation of federal funds for increased cooperation within a state and regional library network.
9. Involve the public in decisions about library services through mechanisms such as citizen advisory groups.
10. Adapt automated equipment and rapid communications to library operations.

The combined planning efforts of the several jurisdictions involved in the Baltimore Metropolitan Area Library Study should produce a comprehensive plan to assist in the determination of services and facility locations that can expect optimum use. Other information to be derived from this kind of planning include: 1) The type and level of collection to serve the residents of the area under study; 2) the extent of the service program; 3) the costs involved; 4) the benefits to be derived from public participation in the decision-making process. If all these factors are brought into proper relationship, the trend will be for maximum use of each library by those persons residing in the facility's service area.

To aid in designing a decision making process which would organize the work which the Committee envisioned for attainment of the public library's goal, assistance was obtained form the Regional Planning Council (Baltimore) and the consultants, CONSAD Research Corporation (Pittsburgh) and John and James Humphry (New York). The Long-Range Work Program described in the following report is a result of this cooperative effort.

The work program, though developed principally for three jurisdictions, is broad enough to be applicable to the entire Baltimore Region. In recognition of this fact and the need to cooperatively develop library service in the entire region, a formal Technical Committee on Library Service has been appointed by the Regional Planning Council. The new committee includes all participants in the initial work and in addition, the directors of the public libraries of Carroll, Harford, and Howard Counties. It will be the responsibility of this new and larger committee to evaluate and carry out where appropriate the concepts suggested in the Long-Range Work Program.

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I. INTRODUCTION

A. Work Program Objectives

Librarians in the Baltimore Metropolitan Area are giving serious attention to the development of a region-wide planning, coordinating and decision-making process. To achieve this objective, CONSAD Research Corporation was asked to design the Long-Range Work Program summarized in this document. The suggested program is oriented toward the development of a "Long-Range Region-Wide Planning and Budgeting Process," under the suggested direction of the Baltimore Regional Planning Council with overall guidance provided by a Technical Steering Committee, composed of Directors of the major library agencies in the region.

Basically, the Long-Range Region-Wide Planning and Budgeting Process (or for the ease of discussion, the "Long-Range Planning Process") has the purpose of organizing information needed by decision-makers when establishing long-range plans for such things as the location of new library facilities, the establishment of cooperative regional services, or the development of collections for special user groups. The planning process should provide a means for:

1. Identifying the types of information needed for the decision;
2. Indicating where essential types of information are missing, and must be researched;
3. Storing and organizing an array of substantive types of information that have already been generated for use in decision-making;
4. Providing a store of available analytic methods needed for various types of decisions and to serve as building blocks for other types of decisions;
5. Providing criteria for decision-making that relates objectives and priorities to available resources; and

6. Identifying alternative sources of needed resources that exist in regional institutions or jurisdictions.

In order to attain these objectives, a series of research efforts must be undertaken which, when completed, will make available a set of inter-connecting components needed to make the Long-Range Planning Process a workable reality. These components, each of which will require a number of research tasks to develop, are as follows:

A. A planning information system;
B. Goals and needs analysis procedures;
C. Program analysis and cost analysis procedures;
D. An institutional and fiscal resources study;
E. A region-wide project selection and resource allocation procedure; and
F. A number of special, in-depth subject studies.

The mission of the Long-Range Work Program, under the aegis of the Regional Planning Council and the Technical Committee on Library Service will be to produce these six components and thereby establish both "bricks and mortar" of a viable and useful planning process.

Of primary concern in this study design is the notion of implementability. The optimum Long-Range Planning Process, it is clear, would embody a set of decision-making services along with a framework for coordinating them. But the creation of a fully articulated planning framework is an effort of large order. It requires difficult-to-develop analytical methods to provide the necessary understanding of causal relationships and of resource utilization. In addition, it requires information handling capability on a large scale. Thus, the attainment of a fully-articulated decision framework may be time consuming and costly.

On the other side of the coin, the needs, interests, and "decision-styles" of those who would make use of such a system must be considered. The need to make decisions with long-range implications, such as the location of a new library, is always immediate and on-going. In addition, the range of factors considered by librarians as important for any given decision is, at present, considerably broader than the range of knowledge available in the systematic social sciences. For example, the design and location of a new library facility to attract and serve low education users may be required. Although it is known that accessibility is an important factor in attracting low education users, it is not clear in a systematic way how the reference services, skills of librarians, and special features such as meeting rooms, type of collection and child-care services would affect usage by less educated residents.

Decisions cannot wait for "science", but instead, must be based upon the partial information available. It is the intent of suggested work program to identify and organize, as well as expand, the amount of useful information that can be made available to guide the decision process, and to establish a flexible, developing, implementable framework for region-wide library planning.

In keeping with these objectives, the work program recommends a phased development of decision services and procedures, which should emphasize:

1. Communicability of information and methods to users;
2. Short-term usability of components of a larger systems framework, in "building-block" fashion; and
3. A means for allowing a reasonable combination of decision-maker judgment with "analytic" information that may be of a partial nature.

B. The Planning Process

The Long-Range Work Program is oriented towards establishing a continuing planning process that reflects the modern concepts of systems analysis. Before elaborating on the components of this planning process, it may be appropriate here to sketch very briefly the essential characteristics of a systems approach to library planning. Figure 1 depicts in highly simplified form a systems approach. The process involves four levels.

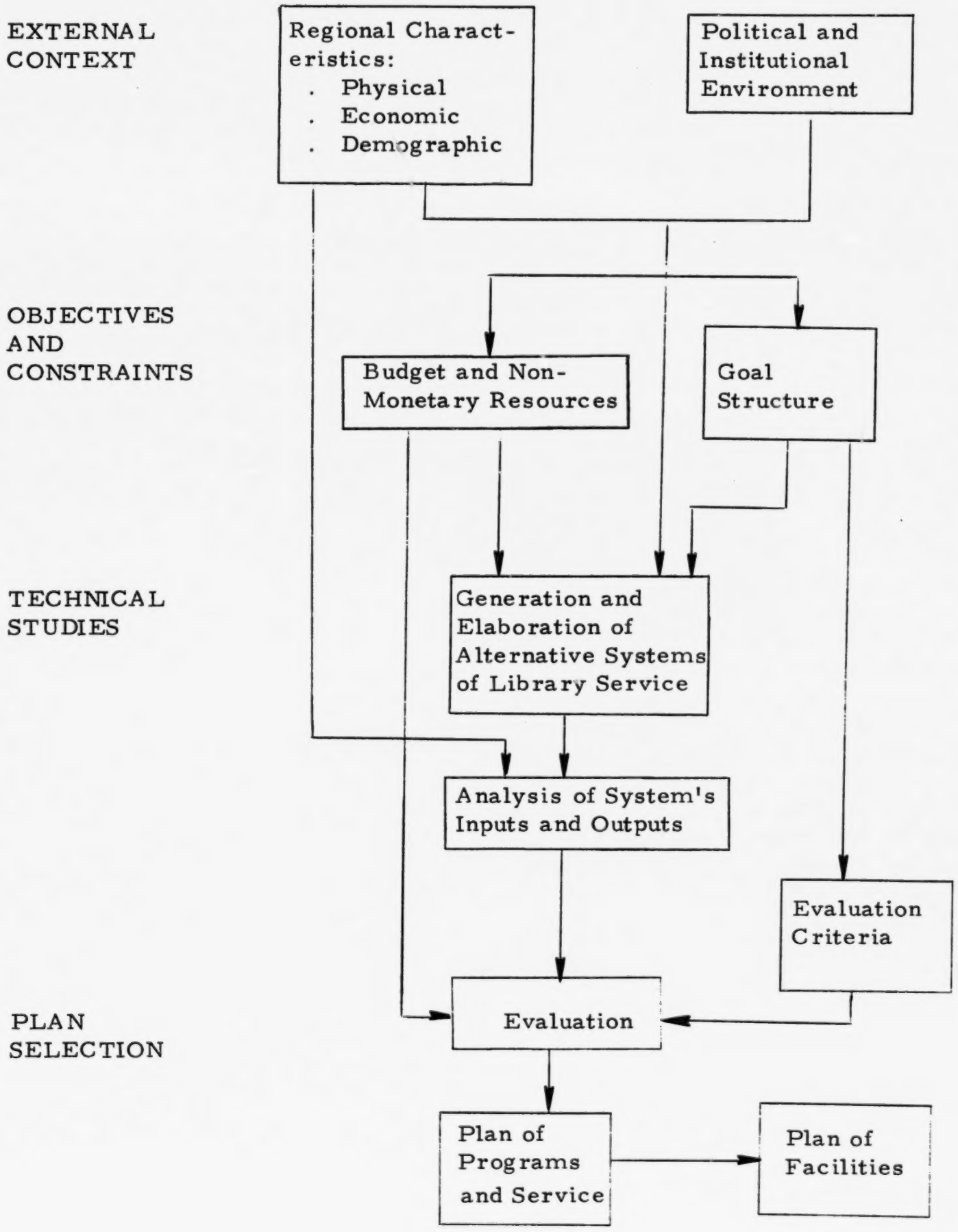
At the highest level, the region's physical, economic and demographic characteristics and its political and institutional environment determine the external context in which the system is embedded.

The systems analysis, per se, begins at the next level where the budget and goal structure define and delimit the system. The budget is taken as fixed, although the properly prepared plan may have considerable budgetary influence. One of the most critical and often neglected parts of the planning process is determination of the system's objectives or goal structure. The recent involvement of citizen participation in the planning process has highlighted the fact that ends are as often in dispute as are means-to-an-end. Means-to-an-end plans can be evaluated only if the system's objective is clearly understood and explicitly formulated.

The next level, technical studies, includes the generation and elaboration of alternate plans, which typically engage the planner's prime attention, often, unfortunately to the neglect of other aspects of the planning process. The alternate service and facility plans are then analyzed to establish inputs required and outputs generated by them, in terms of criteria relevant to the system's objectives.

FIGURE 1

DIAGRAM OF A SYSTEMS APPROACH TO LIBRARY PLANNING



In the final level, the plan selection phase, performance of the plan is evaluated on the basis of the systems performance criteria, how well the system meets objectives given the external context and constraints. The result is selection of a library plan for implementation.

C. Glossary

Each term in the theme of the Long-Range Work Program, a Long-Range Region-Wide Planning and Budgeting Process, has a specific meaning and therefore deserves further explanation.

The term "process" means that the development and maintenance of a high quality library system entails many on-going activities over time, and the activities of planning and budgeting are therefore not merely one-time event. Instead, methods for the continual development of library plans and budgets must be instituted and embodied in an organizational form for on-going implementation.

But the substance of this process is in terms of the planning and budgeting activities for developing the library system. The processes of "planning" entail the assessment of needs for library services over time and space, the creation and evaluation of alternative ways to achieve the needs, and the allocation of resources to a sequenced plan of activities best able to meet needs. The latter aspect of the planning process is, in fact, the "budgeting" process. Budgeting involves the selection of projects and services to be done first and hence should be viewed as short-term implementation tied to long-range plans.

By "region-wide" is meant that plans and budgets should encompass all jurisdictions of the Baltimore region. This embodies the realization that the effectiveness of plans in one jurisdiction depends upon the plans of other jurisdictions in the

region. The term acknowledges that resources of the jurisdictions may be more effective when cooperatively allocated than when allocated separately.

The term "long-range" emphasized the goal identification and attainment orientation of the planning process that is to be developed. This is in contrast to a planning process that responds only to the demands of immediate and pressing issues. By creating a process that is not responsible for putting out immediate fires, the actual goals of the library system can be brought into focus, and plans with a longer-range view can be constructed.

To put such a planning and budgeting system into operation, methods, systems, and structures must be developed in the Long-Range Work Program. Thus is derived the theme for the Long-Range Work Program: the development of a process for library systems planning and budgeting that is long-range and region-wide in nature.

D. Organization of this Report

The remainder of this report is organized into three sections. The first section contains a full description of the nature of each component of the Long-Range Planning Process -- what its objectives are, why it is important to the process, what subjects it includes, and how it should be structured for implementation. The second section contains a work task breakdown of each component, with a description of the methods required to perform the work task, data requirements, and procedures for developing necessary methods. The third section provides a statement of the resources needed to perform each work task including staff skills and time.

II. WORK ELEMENTS OF THE LONG-RANGE WORK PROGRAM

Work Element A: Planning Information System

Rational decision-making places demands upon the acquisition of evaluative information. In library planning, information is needed that describes the benefits and costs of alternative library services, locations, sizes, and so on. Although relatively good information is available for facility costs, the quality of information decreases when the various benefits of alternative facilities and associated services are considered. For example, although good estimates of the usage rate impacts of varying library sizes are available, less is available for the effects of varying library services upon usage, and still less for the effects of library services upon extra-library objectives such as specific educational or income attainment objectives.

The objective of this work element is to develop an information system for organizing all available information required for making library planning decisions, as well as for identifying information gaps. The format of this planning information system would be in consonance with cost-benefit or resource allocation methodology. The system requires a framework for explicitly relating the inputs consumed by the library system to the outputs which it produces. This framework could be organized either by library function or by objective. The heart of the system resides in an "accounting" procedure which would continually gather information on library inputs and outputs. Librarians may thus be able to clearly see what their budget is buying and evaluate alternative ways of redistributing this budget.

Because the Planning Information System is intended for use in the decision process by the librarians, emphasis must be placed upon its clarity, accessibility, and susceptability to updating as new information becomes available. In addition, since it is intended as a descriptive rather than an analytical tool, work may

be initiated toward its development for use in the near term.

Although the accounting framework should be relatively formal due to requirements for specific information on benefits and costs, it need not be computer oriented. A simple file would be an adequate tool for organizing, maintaining and retrieving the information, and would be much more in keeping with the objective of rapid implementation for use in the near term.

Among the types of information to be organized by the system would be:

> Regularly collected or collectable data such as current library usage by location and detailed title type or current unfilled requests;
>
> intermittently collected data such as survey data;
>
> secondary published or unpublished information which is useful in providing information or inferences needed for filling in the planning accounts framework; and
>
> estimating routines or models that might be available or developed in the future; useful for estimating certain of the information needed for filling in the planning accounts framework.

Much of the required data will be generated during the course of normal work. There will be requirements that data be reported by personnel who already are busy with day-to-day operations. Library managers will face the problem common to all management information systems: How do you motivate people to do a good job in feeding the information system? Implementation of information gathering procedures will require a level of personnel supervision and motivation. Information quality will have to be monitored. The rewards from an adequate information base are large but information is not necessarily free.

Work Element B: Goals and Needs Analysis

The development of a plan that is rational assumes that a means-end logic has been established. That is to say, plans are rational insofar as they describe a set of actions that are directed toward the achievement of some objective, whatever that objective may be.

One difficulty in library planning is that while most means are quite clear (e.g., the set of actions that make books and other "stored information" available) the ends are not so clear. Objectives toward which library plans may be directed are usually quite general, and sometimes have the ring of being "after the fact." For example, the American Library Association states that the purpose of the library institution is the:

> "Provision of library services and information resources to support education and research at all levels, and the provision of books for recreation and for continuing self-education."*

How to derive explicit and quantifiable targets for plan-making purposes from this statement is not obvious. This Work Element is intended to develop methods by which library decision-makers can obtain the kinds of information they need for the process of establishing a set of goals and values.

Objectives that may be stated in an explicit form provide a criterion for measuring how well plans are being achieved. That it is impossible to measure program success without an explicit statement of objectives or goals undoubtedly is a point that does not go unnoticed by astute politicians. But today institutions are finding an increasingly urgent role to play in a society where the needs of formerly less vocal and less powerful social groups are gaining attention. The impact upon the various institutions of government, at the very least, is that the objectives of the institutions, and the process by which they are formulated, are being called into

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* American Library Association Bulletin, September, 1967, page 951.

question.

In the case of library planning, the process of establishing explicit goals is made even more difficult by the existence of a number of institutions that provide somewhat overlapping services, including the educational system and industry. Thus on one hand, libraries are providing informal facilities to students for doing homework; and on the other, difficult-to-obtain documents for professionals who make economic transactions and innovations. While these supporting services are indeed valuable, it may be somewhat presumptuous to state as objectives for library services "the maximization of educational attainment or of economic growth."

One way out of this difficulty is to take the approach followed by an expansion-oriented business firm -- that the objective is to maximize the value of services involving the borrowing of books and other stored information that are demanded by users, within resource limitations. This criterion is extremely difficult to implement, however, because knowledge is required of the relative value to be accorded to each type of library service. But it has the advantage of implying the well-known criterion of maximizing the value of services per budget dollars; and this may be implemented, with few modifications, within the classical framework of cost-benefit analysis.

The question must now be addressed, "how are measures of relative value for each of the alternative services to be obtained?" Public libraries, like many other governmental institutions, have traditionally established values for the services they provide through internal judgmental procedures, usually of an informal and even implicit nature -- a form of leadership is exercised in determining what kind of services are good to provide. The value judgments of leadership are applied not only to types of services, but also to the distribution of such services to the various social groups of the society.

> The selection of the service for inclusion in the budget requires that the library establish two sorts of relative value: one for each type of service and one for each social group. Once these values are either explicitly or implicitly established by the institutions, decisions as to the types of services and their distribution can be made.

It is on the basis that usage of certain library services would contribute to the attainment of extra-library goals that librarians exercise leadership in legitimizing the values of libraries as a public institution. Two such goals are higher education and earning power; goals valued by social groups even though they may be unaware of the long-term relationship between library service and each goal.

Traditionally, the value placed by librarians upon library services have been embodied in "standards". The standards are usually no more than ratios of books per capita that a library should maintain. As such, they provide a measure of the collection or inventory size that a "well-endowed" library ought to have. Such a measure is not a good goal indicator for planning purposes for a number of reasons, not the least of which is that it says nothing about performance. Goals are better stated in terms of performance measures which reflect the degree of success with which the library is delivering its services to its various client populations.

The basic dilemma that a public facility planner must face arises from a lack of guidelines for resource allocation. There is no market mechanism (as there is in the private sector) to direct resource allocation for public services. The planner is thrown back on political judgments or the recommendations of experts in each functional area. The expert, without direct mechanisms such as the market to inform him about peoples' wants, has made assumptions about their objectives and 'needs'.

Such recommendations usually take the form of standards. Thus there are outdoor recreation standards*, health standards**, educational standards, etc., which are widely used in each functional area to help allocate resources.

The standards have a number of positive features:

- -Simplicity and efficiency
- -Local application of criteria that has the aura of national expertise.
- -Concrete goals and easy quantification -- no need for complex analyses of linkage between users and services
- -Comparability between cities and their connotations of quality of life.

However, the use of standards has several serious drawbacks. Henrik Blum and Associates have compiled a massive attack on using standards***. Crucial drawbacks of standards include:

1. Application of standards as a fixed ratio (e.g. book per thousand population) to all localities does not recognize that communities differ in tastes according to socio-economic and demographic composition.

2. The monetary resources available for public services in general and library services in particular vary from one municipality to another, depending on size and tax base; but standards provide no way of considering this.

3. Standards are inherently conservative and insensitive to social and technical change.

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* George D. Butter, Introduction to Community Recreation, National Recreation Association (New York, McGraw Hill, 1959); and Standards for Municipal Recreation Areas, Revised Edition, 1962.

** National Commission on Community Health Services, Health, is a Community Affair, Harvard University Press, Cambridge, 1966; American Public Health Association, Guide to a Community Health Study, New York, 1961.

*** Henrik L. Blum, Notes on Comprehensive Planning of Health School of Public Health, University of California (Berkeley) 1968, pp. 4. 32-4. 38

4. Standards do not provide measures of performance in library service programs -- how much of what we want from our institutions are we getting and why no more? As the demand for public resources grows, the need to measure performance will grow.

Library standards, of course, are constantly being improved, and current standards do reflect sophisticated understanding of the library system. Nevertheless, there remains an inherent conflict between the standards approach to library planning and the systems approach, which no revision of standards can reconcile. The systems approach inquires into the whole relationship between inputs and outputs. The standards approach does not.

The need then is to establish performance goals for the library system in terms of the types of services offered and the distribution of these services to various social groups. This is the object of the goals and needs analysis.

Work Element C: Program Analysis and Cost Analysis Procedures

The evaluation of alternative means for the provision of the various library services requires information on the effectiveness of each alternative in contributing to the achievement of goals and information on costs. If this kind of quantitative information could be accurately calculated for every alternative being considered for inclusion in the budget, the job of developing a rational-long-range planning and budgeting process would be largely completed. Such quantitative analysis has not yet been sufficiently developed to provide a complete set of cost and performance indicators for project alternatives. The task of developing sources or methods by which costs and performance may be estimated is thus a necessary component of the long range work program.

The kinds of cost/effectiveness estimates that will be required for the planning process are dictated by the kinds of activities, and the alternative means for implementing them, that are under

consideration by librarians. It is certain that the location of facilities for future population patterns will be under consideration and that the size and mix of collections and the non-book services that should be at each facility, whether old or new, will be in question. Questions of alternative kinds of facilities to serve special user groups such as the blind and handicapped, the disadvantaged, the students, will require cost/effectiveness estimates. Questions of internal library organization will also require cost/effectiveness data for evaluation such as alternate staffing arrangements and the use of computerized systems.

In order to assure that the types of information required for selection between alternatives will be available, the long range work program will <u>first</u> have to explore the relevant "policy space"*; i.e., what are the real system alternatives between which library decision-makers must choose. Thus, to some extent, before analytical techniques are developed it will be necessary to explore and elaborate on the major systems alternatives under consideration. This phase of the work program corresponds to the traditional "sketch planning" activities with which Regional Planning Council personnel are familiar. The sketch planning of alternative systems of service highlight the major policy issues and indicate the crucial policy questions which the quantitative analysis must deal with.

Many kinds of policy alternatives likely to emerge require cost/effectiveness information that is not very difficult to obtain. For example, the papers and dissertations of students in library science, the published findings of past research projects, and information from the planning accounts framework (Work Element A) will provide many pieces of the mosaic of information needed

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* Policy space: The set of all relevant feasible alternative programs and mixes of programs.

to evaluate alternatives. Often only a relatively slight effort in searching for, organizing, summarizing, and/or analysing this available information will be all that is needed to cast it into a useful cost-effectiveness form: i.e., to develop partial models of costs or of effectiveness.

Information relating to library location, scale, collection mix, and non-book services, on the other hand, is more difficult to obtain because the parameters for estimating the effectiveness of the alternatives varies from city to city depending upon the behavior patterns and needs of city population groups. For this reason, evaluation of alternative plans for library facility expansion and location requires a development of systems analytic models*--models that can estimate the effect of many factors varying simultaneously. In the estimation of the effects of alternative multi-facility locations, the use of systems models is especially needed because the effectiveness of a single-facility in terms of its size, location, and collection mix characteristics depends upon the characteristics of other facilities in the plan. For example, the location of a small facility in a neighborhood where auto-ownership is high may be of little effectiveness in contributing to library goals if another large facility is being planned at another location which, although relatively distant is still accessible to the neighborhood.

The first steep toward the development of a multi-facility evaluation model, the development of a single-facility model, was accomplished in the Short-Range Work Program**. The

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*A model may be defined as a simplified description of a real world situation or problem. When used in systems analysis, the description is usually in mathematical terms and may be described more narrowly as an abstract representation of a set of variables.

** See "A Behavioral Model for Use in Library Planning; Results of the Short Range Work Program" prepared for the Regional Planning Council by CONSAD Research Corporation, June, 1969.

single facility model that was developed, however, requires (a) refinement to incorporate detail on characteristics of collections including size and mix and service characteristics, and (b) extension to incorporate simultaneous evaluation of many facilities.

In addition to the methods to be developed under this Work Element, several other studies may be undertaken during Work Element F, Special Subject Studies, to provide more extensive evaluation capability in special areas. When Special Subject Studies provide an understanding of various library services that allows quantitative specification of the underlying relationships, these Studies may become the basis for program and cost analysis methods of the type being discussed here.

Work Element D: Institutional and Fiscal Resources Study

Not only do libraries cooperate between themselves (as, for example, in areas of interlibrary loans, and the proposed sharing of central book processing and cataloguing), but also libraries may cooperate with other institutions -- schools, colleges, vocational institutions, professional societies and institutions, industrial and business interests, government agencies and programs.

The study of cooperative activities may properly include the study of all types of libraries and functions in all areas of library activity -- reference, circulation, acquisition, technical services, locations -- viewed within the framework of present and projected physical facilities, organizational structures, economics, and staffing. Obviously, the implications of a cooperative activity are widespread over these kinds of considerations. As an example, the decision to cooperate in the area of a union catalog (or a union list of serials, a book processing center or a shared tape service, to list a few examples) depends on:

1. Policies that would be necessary to accomplish the task,

2. Resources that would be needed,

3. Contributions from each of the cooperating agencies that would be needed to "cover" required resources (in terms of time, staff, materials, administration, financial support),

4. Compatibility among cooperating agencies (and the adjustments that would have to be made to accommodate or change the member institutions' policies),

5. Conversion problems.

The areas in which cooperation can occur are diverse. They could include the following:

1. Location of new facilities,

2. Materials (via interlibrary loan); reference center, subject specialization centers,

3. Agreements between school systems and public libraries on the scope of their individual library services with joint use of facilities in some situations,

4. Information networks (sharing of data-bases, computers and computer programs for handling the information; specialized staff to service the facility; time-sharing and on-line terminal services).

There are numerous tasks to be done to aid the decision-maker(s) in the above mentioned areas. Information should be gathered on facilities, organization charts, collection analysis and policies, staffing (and job descriptions), services offered, circulation statistics (and descriptions of use and restrictions), financial data (budgets, tax bases, projections and allocations). An analysis of these data will help determine usage rates, participation rates, complementary and supplementary service areas and functions, compatible and incompatible policies and usages, bottlenecks in operations and functions, and high cost items (not only in terms of money, but also time and manpower).

An analysis of the factors most relevant to cooperation (e.g., interest in sharing book stocks, processing, personnel, joint-facilities, financial planning) is needed in order to set up priorities (rankings) among the cooperating libraries. Tradeoffs among these priorities will have to occur, and the implications of these tradeoffs will have to be made explicit to these organizations so that rational decisions can be made.

Work Element E: Region-Wide Project Selection and Resource Allocation Procedures

The technical information for comparing a given alternative with other alternatives will be obtained from Work Element C: Program and Cost Analysis Procedures. In Work Element E, procedures are to be developed for selecting one alternative over another.

In many cases, the selection procedure is quite simple and direct. If only one goal exists and just one budget period is expected to constrain the program, then that alternative is selected that provides the highest contribution to goal attainment for the available budget. But if alternatives contribute to several goals simultaneously, and in the more difficult case, if the selection of one alternative affects the goal contributions of other alternatives, then the selection procedures are more complicated.

Such procedures in the past have been entirely judgmental. For example, a set of projects may be presented one-at-a-time to a board of commissioners who would select by vote. If the resulting array of projects exceed the available budget, then a reappraisal might be required.

It is the purpose of this Work Element to provide a better framework for the selection process by which plans and budgets are established.

Selection between planning alternatives may proceed on a trial-and-error basis drawing upon informal judgment or it may

attempt to make use of more formalized procedures. Either method will require an organized set of evaluational information such as would be provided via Work Element A. It will be the task of this Work Element to organize the findings and results of all other Work Elements into a procedure for aiding in the project selection and plan-formulation process. To do this, various aspects of formal evaluation techniques that are operational must be drawn upon and incorporated in a selection procedure. In its early stages of development this procedure will be largely based upon informal judgment and will be of an "organized trial-and-error nature". Those methods will make heavy use of the program and cost analyses, value and needs statements, fiscal resource and interinstitutional linkage information provided in the other sections of the Long-Range Work Program. These will be combined to form a set of planning guidelines, the result of Work Element E.

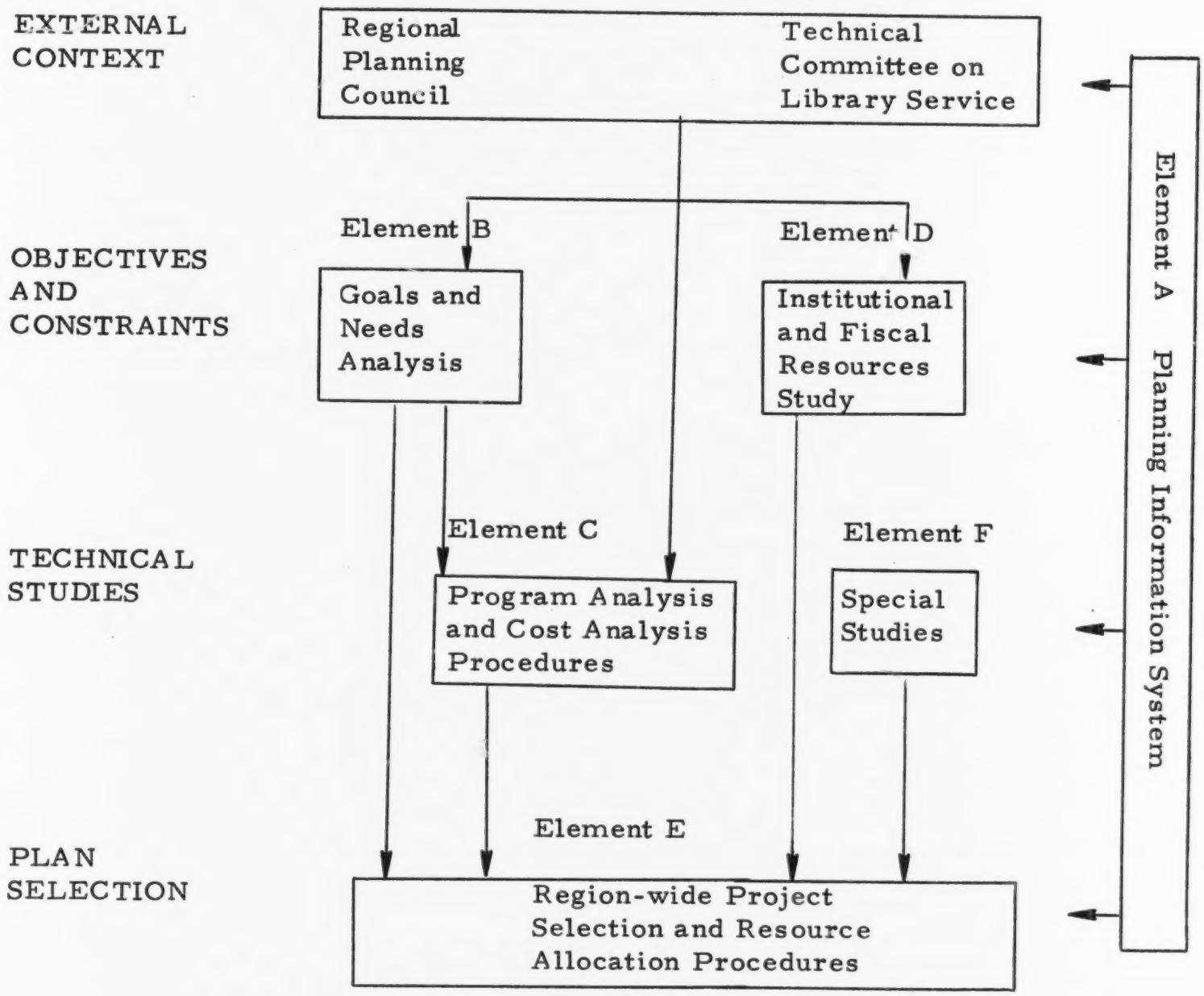
Work Element F: Special Studies

The main emphasis of the Long Range Work Program is on developing a system for long-range planning and budgeting and inter-agency cooperation. As such, the research is much more "process-oriented" than "product-oriented". It would not be surprising, however, to discover that to properly implement the process of long-range planning, some studies of particular problems or opportunities (e.g., services to the disadvantaged, joint processing centers, etc.) may be required. Thus this rather open-ended and undefined Work Element is formally included in the Work Program. It is believed that the primary constraint on cooperative long term planning lies not in the lack of specific information but rather in institutional inability to organize and utilize this information in planning and budgeting procedures. For this reason, the conduct of special studies occupies a distinctly secondary role in the overall work program.

Schematic Work Program

The work program (Elements A-F) outlined above is depicted in Figure 2 in schematic form, corresponding to the "Diagram of a Systems Approach to Library Planning" Figure 1, page 5. As can be seen, the Regional Planning Council and the Technical Committee on Library Service are relied on to provide the external context in which the library system is to function. Work Elements B and D determine the objectives and constraints of the system. Work Elements C and F constitute the technical studies. Work Element E provides the framework for plan selection, and the whole process is fed by the planning information system, Work Element A.

FIGURE 2
SCHEMATIC LONG RANGE WORK PROGRAM



III. DETAIL TASK DESCRIPTION

The work elements just outlined represent the basic philosophy and approach toward developing a useful and viable Long Range Planning Process. The detailed task descriptions of this section constitute the suggested study plan by which this approach can be implemented.

Task A. Planning Information System

This task consists of three major sub-tasks: Information requirements, preliminary systems design; and implementation plan.

A.1 Define Information Requirements and Sources

This sub-task aims at identifying the planning, budgeting and decision making functions of the participating library agencies (referred to hereafter as the "libraries"); determining what information is needed to support these functions; and ascertaining how this information is, or may be, made available.

A.1.a. Survey the decision-making process -- Interviews with libraries' personnel and personnel of other related agencies should be undertaken to establish their functions and decision-making procedures. Particular emphasis should be given to the informational context of decision-making and the pattern of information flow.

A.1.b. Prepare information requirements model--An information requirements model is a normative description of the information flows required for long-range cooperative planning, budgeting and decision making. As such, the information requirements model will be used in choosing the basic approach of the planning information system and in developing the total system design.

A.1.c. Inventory data sources, available and potentially available--All data relevant to the libraries'

informational requirements should be investigated in terms of their availability or potential availability. All feasible data sources, (other local agencies, the 1970 census, etc.) should be evaluated for their content, relevance, availability, reliability, frequency, and cost. The question of impediments to information exchange among the libraries and between them and other agencies should also be explored.

A.1.d. Select data items to be included in the system--Initial selection of the data items to be included in the system should be based both on the information requirements model and on the inventory of data sources. A consistent set of criteria on which to justify the inclusion or omission of data items should be developed both to aid in the initial selection process and to allow rational modification of the system in the future. Some data items may be required though not easily available. The likely costs and benefits of adding such items should be roughly estimated, and thus priority for their inclusion be determined.

A.2. Define Preliminary Planning Information System

This sub-task starts with the specification of information requirements and sources (above) and based on this produces a general design of the total system.

A.2.a. Develop design alternatives--A number of alternative approaches to the major questions of design raised by sub-task A.1. should be developed and analyzed prior to final design selection. Past experience of the consultant and comparative study of existing systems designed to serve similiar functions may both be useful here.

A.2.b. Select basic design approach--The selection of the basic design approach is too important a decision to be solely the responsibility of the consultant. The steering committee and the consultant should discuss the alternatives and jointly decide the approach to be followed. Modification of this choice, of course, is possible as the design task proceeds.

A.2.c. Develop general design of the system--The selected

approach must be described in more detail to form a general system design. Preparation of the systems design includes:

1. Preparation of information flow charts, identifying the acquisition (source, content, and collection procedure), storage (media, and method of access), processing, and output (uses and users) of information.

2. Specification of data files, by form, content, utilization, and purpose.

3. Definition of processing activities by which input data is refined and manipulated into meaningful output.

A.2.d. Determine requirements for operating the system--The preceding sub-tasks constitute the design of the planning information system. Now the organizational and administrative feasibility of implementing the system must be determined. This involves identifying the requirements of proper system operation, the approximate staff and budget necessary for installation and continuing operation, and organizational responsibilities.

A.3 Prepare a Plan for Implementing the System

The object of this sub-task is to prepare a detailed plan for the work that is immediately to follow design of the planning information system. It is unlikely that the entire system can be immediately implemented. Rather an implementable sub-system should be selected that will be both of immediate use and of long-term significance to regional library planning process.

A.3.a. Select implementable sub-system--A detailed systems design should include:

1. Information flow charts
2. Data requirements
3. Data collection procedures
4. Input and output specifications
5. File descriptions
6. Forms and data instruments design

7. Operating procedures
8. Monitoring procedures for determining data quality and reliability
9. Staff requirements
10. Staff training and assistance to staff during implementation.

Task B: Goals and Needs Analysis

An operational definition of the goals and needs of the region's libraries must reflect:

1. The present uses and users of the libraries;
2. the present day non-users; and
3. the perception of goals and needs by leadership (both library and non-library).

This work element then is composed of four sub-tasks--one for each of these three topics and a final one to integrate them and synthesize a statement of goals and needs. It should be noted that this research should result both in a product--a statement of goals and needs--and a process--a means by which goals for the regions libraries may continually be explored, articulated and revised.

B.1. Describe Present Uses and Users

Leadership, of any activity, when asked of their goals, often reply "to do what we are doing now, only better". This is far from a foolish statement. It reflects the facts that goals--at least in an <u>implicit</u> manner--give rise to, and are embodied in, ongoing activities and programs. This sub-task aims at determining explicitly what the libraries do and giving some clue as to how well they do it.

B.1.a. Characterize present library services--Everyone knows, in a general way, what a library is. There is a need, however, for a formal, detailed analysis of library services by both <u>function</u> and <u>objective</u>. The uses to which the libraries are put, in terms of ultimate purpose or final output serve to characterize the bundle of activities

comprising the library system in an abstract manner. This abstract bundle of attributes then represents what is meant by a library.

B.1.b. Characterize present library users--Just as library services may be abstracted, so too may the present users--this time in terms of the demands which they characteristically make on the system. Rather than classify users by occupation (student, housewife, professional, etc.) or by typical use (study, recreational reading, reference, etc.) this sub-task should characterize the user in terms of the demands or requirements which he places on the system. The system then is an abstract bundle of services while the user is an abstract bundle of requirements.

B.1.c. Perform gap analysis--Based on the two preceding sub-tasks, a "gap analysis" should be undertaken. The gap analysis would match the system against the user, the abstract services provided versus the abstract requirements demanded. In this way, it would be possible to determine how the library system is doing--in what areas do services meet requirements and in what areas do they not.

B.1.d. Establish procedures for updating--The analysis specified above does more than provide an one-time picture of the present state of the library system, users and uses. It also provides a framework for monitoring the performance of the system as time goes on and both services and requirements change. A ongoing mechanism for updating the analysis--for providing new information for the framework--should be set up.

B.2. Characterize Non-Users of the Libraries

Just as users of the libraries provide a clue as to what the libraries are doing right, the non-users provide a clue as to service or program inadequicies. Unfortunately, study of non-users is a difficult and expensive task, as it requires in-the-home surveying. On the other hand, this type of surveying yields

extremely valuable information and hence should be included in the work program.

B. 2. a. Design survey procedures and questionnaires--Prior to administering a non-user survey, very detailed attention should be given to designing survey procedures and the nature and content of the questionnaires. The information to be gathered here will be of use not only in this task but in several others. The possibility of combining the non-users survey with other research and survey planned for or being conducted in the Baltimore region should definitely be explored.

B. 2. b. Administer non-user survey--The exact procedures used will be determined by the preceding sub-task.

B. 2. c. Analyze survey and prepare a report--The analysis of non-users should focus on three topics; who are the non-users; why do they not use the library and how can this be changed; and what advantages might accrue to the individual and to society if various non-users patterns are altered.

B. 3. Determine the Goals and Needs Perceived by Leadership

Leadership, of the library system and of the community at large, seldom formulates or articulates the goals which they are striving to achieve. This sub-task aims at trying to make leadership more conscious of their implicit value system and to make this set of values more explicit. Leadership of both the library system and the community should be heard.

B. 3. a. Design a leadership goals and needs survey--The survey should be designed to shed light on these questions:

1. What services should be provided?
2. To whom should these services be provided?
3. What impediments stand in the way of providing these services?
4. How should these impediments be met?

B.3.b. Select library leadership and administer survey--Library leadership should be selected on the basis not only of their policy-making roles and interests, but also their likely responsiveness to a survey of this kind.

B.3.c. Select community leadership and administer survey--Community leadership should be selected on the basis of their political power, their role in the libraries decision-making process, and their representation of otherwise voiceless elements of the community, as well as their likely responsiveness.

B.3.d. Analyze surveys and prepare report--The report should treat the ease with which leadership is able to perceive and articulate goals as well as the goals themselves.

B.4. Synthesize Statement of Goals and Needs

The preceding work must culminate in an operational statement of goals and needs for the regions libraries. This statement should be a joint effort of the consultant and the steering committee. Its adoption by the steering committee will serve to guide the future course of region-wide long-range library planning.

Task C. Program Analysis and Cost Analysis Procedures

This task is concerned with developing procedures for estimating the cost and the effectiveness of alternate plans for services and facilities. All phases of the library system are of interest, although special emphasis must be given to the question of new-facility planning--location, size and services to be offered.

C.1. Explore and Elaborate Feasible Alternative Programs

Models and other analytic procedures must be designed for the specific context in which they are to be employed. A major effort may be required to determine this context, i.e., to determine the major types of systems alternatives between which the library decision-makers must choose. The process of

*Termed "policy space" in Chapter II.

exploring and elaborating system alternatives is one of the traditional jobs of the planner. Termed "sketch planning". the process involves:

1. Generating, in more or less schematic or abstract terms, major strategic alternatives.
2. Characterizing, again in schematic or abstract terms, the basic distinguishing features of these alternatives.
3. Translating these abstract systems into more concrete proposals and plans.
4. Comparing and contrasting these various proposals.

C.2. Establish Analytical Requirements

After the major system alternatives have been detailed, they must be closely examined to determine what types of estimates are required to choose between them and how these estimates will be used in the planning process; that is, the required policy sensitivity. In addition, this sub-task must establish what data are available or may come available for use in the modeling.

C.2.a. Identify needed estimates* -- In the course of decision-making, certain estimates must be made. This sub-task should identify the complete range of required estimates.

C.2.b. Determine required policy sensitivity -- The models must reflect the "policy space" available to the decision maker. Models which do not have the requisite "policy-knobs" may be interesting in a descriptive sense but not fully useful in a decision context. For example it is interesting to know

*In this context, "estimates" mean quantitative statements of expected outputs, should some action or system alternative be implemented, e.g., expected usage of community rooms under consideration for inclusion in a proposed facility.

that high income people use libraries more than low income people. But "income" is not a relevant policy variable to the extent that librarians have no control over raising incomes to increase usage.

C.2.c. Identify data needs -- Seldom will the full concept of a model be capable of being implemented with available data. The data required by each sort of model must be identified and the likely availability of this data determined. When sufficient data is not available, a decision must be made whether to collect what is needed or to alter the model formulation so that existing data can be utilized.

C.3. Upgrade Existing Model of Single Facility Attendance

The Short Range Work Program* resulted in a demonstration model of single facility library attendance, which aroused the interest of the steering committee. This model should be further upgraded to include more variables so that it is more realistic, accurate and policy-sensitive. To do this will require more data and more complicated analysis.

C.3.a. Determine needed improvements -- The Short Range Work Program pointed out a number of ways the model could be improved. The actual improvements to be made, however, strongly depends on the whole study context -- the role this model will play, the resources available for it, its relative priority, the immediacy of the need, and data collection plans. The consultant and the committee should jointly decide on needed improvements.

C.3.b. Collect additional data -- Depending on the above sub-task, a greater or lesser amount of additional data will have to be collected to effect needed improvements.

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*See "A Behavioral Model for Use in Library Planning: Results of the Short Range Work Program" prepared for the Regional Planning Council by CONSAD Research Corporation, June, 1969.

then be used to adjust the output of the single-facility model of task C. 3. The use of the two models in conjunction with one another would, in effect, result in a multi-facility model.

3. At the most realistic level of analysis (though also the most difficult) the library system can be viewed as a complex interaction between users and suppliers of library services. A "systems-analytic" model which would reflect the basic elements of this complex interaction must incorporate consideration of:

   a. the factors influencing the demand for, or consumption of, library services by different potential user types
   b. the geographic distribution of user types
   c. the factors determining the library services produced by various facilities and for activities (e. g. a book collection of certain size and composition produces certain services)
   d. trip-making behavior of the potential user (i. e. how far, and how often, will a given user travel to make use of given services)

   A systems analytic model of attendance would integrate all the considerations to show how attendance at any one library is influenced by the whole system of library users and the whole system of competing facilities.

   The consultant and committee must agree on the most productive approach.

C. 4. b. Collect needed data.

C. 4. c. Calibrate the multi-facility model.

C.5. Conceptualize and Calibrate Other Models and Procedures for Cost-Effectiveness Analysis

During sub-task C.1, the need for estimating procedures other than the single and multi-facility attendance models will become apparent. These other models need not be overly complex. Examples of the type of models contemplated are:

1. Cost estimating relations for new facility capital costs.
2. Cost estimating relations of the effect of existing and proposed facilities on operating costs.
3. Staff tenure and turnover models.
4. Models dealing with the storage requirements of books and other media.
5. Models for determining inter-library book pick-up and delivery schedules.
6. Models for determining optimum book inventory levels.
7. Models for determining optimum loan periods and fine schedules.
8. Procedures for identifying "high-circulation" items.
9. Procedures for detecting shifts in demand and forecasting future demand.

The last four of these topics are suggested by P. M. Morse in his book* on the application of operations research to library problems. This book demonstrates many other types of analytical support which can be offered the library decision-maker.

C.5.a. Determine model requirements and conceptualize model.

C.5.b. Collect needed data.

C.5.c. Calibrate the models.

Task D. Institutional and Fiscal Resources Study

The concept of cooperative long-range planning and budgeting means that the individual library systems must surrender, to a

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*Philip M. Morse, Library Effectiveness: A Systems Approach, (Cambridge: The MIT Press, 1968)

greater or lesser degree, their former perrogative of unconstrained decision-making. This task concerns itself with determining the basis for inter-institutional cooperation.

D.1. Describe the Present Inter-Action of Libraries

Even at the present, the various library institutions do not operate in vacuum but daily influence each other.

D.1.a. Describe library inter-action from the consumer point of view -- Ultimately, long-range cooperative planning is meant to benefit the consumer of library services. How is the consumer presently affected by the existence and inter-action of numerous library systems in the region? This sub-task should tell.

D.1.b. Describe present library inter-action from the libraries point of view -- The librarians are much more familiar with the technical aspects of library interaction than are the consumers. Thus this aspect will throw light on the technical aspects of inter-action.

D.1.c. Describe present library inter-action from top management (library and non-library) point of view -- The men who set library policy and allocate the funds to operate them see the question of inter-library interaction from a much broader and more complex point of view.

D.2. Describe Opportunities for and Implications of Future Library Inter-action

The structure of this sub-task should correspond to that of the preceding one, with a description given from the three different viewpoints.

D.3. Explore Changes in Institutional Structure Required by Increased Cooperation

D.3.a. Report on cooperative library practices of other systems in the U. S. -- Other areas have established, or are now establishing, procedures for increased inter-library cooperation. A study of these may provide lessons applicable to the Baltimore Region. Personal contact may be

required where published reports are insufficient.

D. 3. b. Develop alternate schemes of cooperation -- Several different arrangements, employing different basic assumptions about the political context for cooperation should be developed.

D. 3. c. Evaluate alternative schemes -- The different arrangements should be evaluated on the basis of selection criteria specified in advance by the committee.

D. 3. d. Detail implication of selected alternative -- The full implications of the selected alternative should be worked out in detail prior to implementation.

D. 4. Explore the Possibilities for Cost-and-Revenue-Sharing

Ultimately, cooperation among libraries implies a redistribution of costs borne and services provided. For example, at present Pratt Central offers major reference services for all borrowers in the region. There are, realistically, only two ways in which extensive redistribution of costs and services are possible:

1. cooperative services can be offered at little or no increase in borne costs (e. g., the cost of Pratt Central offering reference service to all regional borrowers is only slightly greater than that of serving only City borrowers (economics of scale)).
2. costs entailed in cooperative services are also cooperatively shared.

This sub-task will explore the fiscal implications of cooperation.

Task E. Develop Region-Wide Project Selection and Resource Allocation Procedures

The ultimate decision is the resource allocation decision. Planning must result in budgeting. The first four tasks have aimed at providing information, establishing a set of goals, providing estimates of costs and effects, and determining an inter-institutional cooperative framework. This final task is

left with the job of establishing a set of formal procedures by which all of this information can be employed in making difficult decisions. The procedures may assume one of three levels of complexity.

E.1. Establish Formal Decision-Making Criteria

The least complex approach to formal decision-making may be made by means of a set of criteria. For example, "benefit - cost" criteria* are often used to justify Federal investment decisions -- the ratio of the benefits produced (measured in dollar terms) by the costs incurred serves as the criterion. Similarly, many private firms employ "rate-of-return" criteria, while other employ "discounted cash flow" in their investment decisions. The first step in formal decision-making is to derive a similar criteria for the cooperative regional library planning and budgeting process.

E.1.a. Determine possible criteria -- This sub-task should start with a search of the literature to determine what criteria relevant to the present case have been developed in the past. Based on this, a tentative list of criteria can be developed.

E.1.b. Demonstrate application of criteria -- The alternative sets of selection criteria developed above should be applied to a typical or hypothetical decision problem to demonstrate how the criteria works and what results its applications produces.

E.1.c. Select a set of criteria -- Based on the results of the demonstration and further discussion with the committee, a set of criteria should be selected.

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*A criterion is a standard by which to judge the merit of decisions which may produce a wide array of costs and benefits.

E. 2. Establish a Planning-Programming-Budgeting System

The next stage of complexity is the planning-programming-budgeting system (PPBS). PPBS represents an attempt to unify and rationalize the whole long-range planning and budgeting process, and has received wide attention (including in the Baltimore area) in recent years. The creation of a PPBS, its design and implementation is not an easy task.

E. 2. a. Develop specifications for a library PPBS -- This includes defining the objectives of the PPB system and the corresponding objectives of the participating agencies and defining the systems characteristic attributes and requirements.

E. 2. b. Define program structure -- The program structure provides a framework for allocating resources and measuring goal attainment. It organizes library activities into output orientated categories which correspond to library goals. In developing the structure, measures of program output also are defined.

E. 2. c. Specify the analytic methods to be employed-- Task C has already developed a set of cost-effectiveness estimating procedures. To be specified is how these procedures are to be employed in preparing for decision makers the formal analysis of alternatives. Procedures for preparing the multi-year plan of programs and appropriations also are required.

E. 2. d. Demonstrate the PPB system -- Using one or more of the various program categories defined in E. 2. b., the principal features of the PPBS should be developed as a pilot demonstration:

1. Cost-effectiveness analysis of alternative library services (or service mixes) that are proposed to attain the selected objectives. Documentation of this analysis.

2. Consideration of alternatives by administrators and other decision-makers.

3. Formal selection from alternative services.

4. Multi-year schedule of program outputs.

5. Multi-year schedule of program financing.

6. Monitoring of program output so as to evaluate the chosen services.

7. Redefinition of objectives, program categories, and output measures when warranted and the repeat of (1) -(6).

PPBS development should be incremental and items (6) and (7) will not take place for two or three years after a program alternative is selected. As staffs and decision-makers become familiar with the PPB procedures, new program categories should be included in the process and the cycle commenced in the new areas.

E. 2. e. Arrange appropriate administrative arrangements -- The questions of how the PPBS is to be administered and linked to local planning and budgeting procedures should receive great attention.

E. 3. Design and Implement an Optimizing Procedure

The most complex approach to formal decision-making is the optimizing procedure or optimizing model. The prior analysis aimed to arrive at a coherent set of goals, methods for estimating cost and effectiveness of alternate plans, inter-institutional cooperative procedures and criteria for plan evaluation. It is then, in theory, a straight-forward task to determine mathematically an optimum set of actions under a given budget. Whether this is possible in practice would be investigated in this sub-task.

E. 3. a. Survey and evaluate existing optimizing methodologies--A large number of optimizing method-

ologies are known in the literature. Each must be investigated to see if it is relevant here, and the most promising one chosen for further trial.

E. 3. b. Demonstrate application of selected optimizing procedure -- A typical application should be worked up to test the operating characteristics of the selected procedure.

E. 3. c. Evaluate the practicality of optimizing procedures in this context -- On the basis of the demonstration (E. 3. b.), a decision on whether the procedure is practical.

Task F. Special Subject Studies

A number of special subjects likely to be of concern to library decision-makers have been identified. Among these are the following:

1. Special Users Needs
2. Staff Quality and Needs
3. Collection Mix
4. Information and Communications Technology
5. Traffic, Parking and Shopping Center Effects
6. Future Demographic Patterns
7. Hierarchy-Facility Patterns
8. Social Effects

During the course of the Long-Range Work Program a number of other topics of interest may arise and some of those listed above diminish in importance. Therefore, no specific listing of special topics is recommended in this report.

IV. TIMING OF WORK TASKS

The tasks just described as part of the Long Range Work Program are capable of being conducted at various levels of funding. The timing suggested in this section are based on the assumption of moderately lean available resources, and a two-to-three year study period.

Timing

The critical timing sequence involves the string of activities in Tasks B and C: goals and needs → alternative systems → analytical requirements → development of analytical methods. This string of activities may take between 2 and 2 1/2 years to complete. The other tasks, A, D and E, are not critical in timing and may be undertaken at the convenience of the study team.

Suggested First Steps

Task B is recommended as the first step for the following reasons:

- It lies on the critical path and hence is a limiting factor.
- It is a subject of much interest to and concern by the Technical Steering Committee.
- It is a topic likely to engender financial support from outside funding sources.
- It is a topic of interest in and by itself, without necessary relationship to establishing a formal planning process.